I. Artemisia papposa (Owyhee sagebrush)

II. Family: Compositae

III. Status: Uncommon on Idaho's sensitive list.

IV. Known Locations:

Idaho: Owyhee County:

a. T. 10 S., R. 4 W., Sec. 1 SW 1/4 NW 1/4
b. T. 8 S., R. 6 W., Sec. 34
c. T. 9 S., R. 2 W., Sec. 16
d. T. 10 S., R. 4 W., Sec. 10
e. T. 10 S., R. 4 W., - over several sections on the Pleasant Valley Table
f. T. 8 S., R. 4 W., Sec. 16 NE 1/4 NE 1/4
g. Above Nip and Tuck Creek
h. Mudflat Area
i. T. 12 S., R. 3 E., Sec. 20 E 1/2
j. T. 14 S., R. 5 E., Sec. 8 SE 1/4
k. T. 12 S., R. 2 W., Sec. 35 & 28
l. T. 13 S., R. 4 E., Sec. 18 NW of NE
m. T. 13 S., R. 1 W., Sec. 25 NW of NE
n. T. 14 S., R. 4 E., Sec. 28 NE 1/4
o. T. 14 S., R. 2 E., Sec. 30 SW
p. T. 14 S., R. 1 E., Sec. 24
q. T. 10 S., R. 2 E., Sec. 19
r. T. 10 S., R. 4 W., Sec. 1
s. T. 15 S., R. 1 W., Sec. 6
t. T. 13 S., R. 6 W., Sec. 13
u. T. 12 S., R. 4 E., Sec. 29
v. T. 11 S., R. 2 W., Sec. 2
w. T. 10 S., R. 1 W., Sec. 15

Camas County:

a. T. 3 S., R. 17 E.
b. T. 2 S., R. 17 E., Sec. 3

Gooding County:

a. T. 3 S., R. 14 E., Sec. 23 & 11

b. T. 3 S., R. 12 E., Sec. 24 & 16

c. T. 3 S., R. 51 E., Sec. 17

Blaine County:

a. T. 1 N., R. 21E., Sec. 2, 33, 35, 28, 29

Elmore County:

Bennett Mt. - Camas Creek T. 2 S., R. 17 E., Sec. 3

Lincoln County: T. 3 S., R. 16 E., Sec. 16

Oregon: Malheur County:

a. T. 40 S., R. 46 E., Sec. 32

b. T. 33 S., R. 46 E., Sec. 13 & 14

c. T. 33 S., R. 46 E., Sec. 29 & 30

d. T. 40 S., R. 45 E., Sec. 21

Nevada: Elko County:

a. T. 45 N., R. 56 E., Sec. 32

b. T. 40 N., R. 54 E., Sec. 27

V. Soil Type: Shallow, poorly drained volcanic loams.

VI. Habitat and Ecology: The underlying soils determine the different sagebrush site distribution patterns. A. arbuscula occurs in shallow soils with a restrictive B horizon. A. papposa is found in similar sites with the additional features of being in rocky or non-rocky swales and drainages where water collects in the spring. Also A. papposa only occurs in areas where the soils are derived from basalt.

A. papposa flowers in early spring. Most other sagebrush species flower in late summer. A. longiloba (Nutt.) also flowers early in the season and is sporadically found with Artemisia papposa. Early flowering may be of some advantage in this ecological site. Also A. papposas' leaves dry up and are deciduous by late summer to help survive drought conditions. A. papposa has hairy leaves like other sages but lacks oil from glands. The lack of oils may explain its inability to withstand late summer drought and heat. Also the lack of large amounts of oil may contribute to its high palatability which is greater than associated sagebrush.

VII. Remarks: Sagebrush has increased on some western rangelands. This is caused by many factors including: (1) overgrazing of more palatable species and (2) the control of fire. Because of this situation range "improvement" programs are implemented to remove sagebrush from rangeland using a variety of methods.

VIII. Hazards: Sagebrush is treated with 2,4-D, other herbicides, plowing, and chained off (mechanically removing it). A. papposa is very sensitive to these chemical controls, especially the 2,4-D because of its large leaf surface and occurrence in drainage areas.

IX. Management Recommendations: I recommend protecting the majority of A. papposa sites from hazards. Not because of a low number of individuals but because of its fairly narrow range and its sensitivity to range "improvement" programs which often cover areas larger than any population of A. papposa. The threat of total destruction and thus the extinction of this species in the Boise district through range "improvement" by 2,4-D spraying is a real possibility.

The Vail district in Oregon, bordering the largest population of A. papposa known, sprayed very large areas with 2,4-D in 1976 as did the State of Oregon on its state land bordering the Owyhee Resource Area.

I. Astragalus atratus var. owyheensis (morning milk vetch)

II. Family: Legumenosae (Fabaceae)

III. Status: Federal Category II list.

IV. Known Locations:

Idaho: Elmore County:

a. T. 7 S., R. 13 E., Sec. 32

b. Bennett Mtn. area.

Owyhee County:

a. T. 14 S., R. 1 E., Sec. 26

b. T. 5 S., R. 9 E., Sec. 34

c. Hot Hole East of Bruneau.

d. T. 9 S., R. 13 E., Sec. 11

Twin Falls County:

a. Near the dam at Salmon Falls Creek

b. T. 14 S., R. 33 E., Sec. 7

c. T. 9 S., R. 13 E., Sec. 11

Oregon: Malheur County: T. 15 S., R. 40 E., Sec. 5

Baker County: 10 Km SW of Baker, OR, Blue Canyon

V. Soil Type: "stiff soil", (Davis 1952).

VI. Habitat and Ecology: A. atratus var. owyheensis grows on bluffs overlooking the Snake River Canyon surrounded by sagebrush.

VII. Remarks: The leaves of A. atratus var. owyheensis blend in with the leaves of grass and thus are not easily noticed. Also they are similar to the other variety A. atratus var. inseptus.

VIII. Hazards: Range "improvement" programs, increased agricultural development and overgrazing.

IX. Management Recommendations: Protect from hazards. Obtain more information and range locations.

I. Astragalus calycosus (matted milk vetch)

II. Family: Leguminosae

III. Status: Uncommon

IV. Known Locations:

Idaho: Elmore County:

a. T. 7 S., R. 13 E., Sec. 32

b. T. 14 S., R. 4 W., Sec. 29

Owyhee County: T. 14 S., R. 4 W., Sec. 29

Bingham County: T. 2 N., R. 32 E., Sec. 21

Bonneville County: T. 1 N., R. 37 E., Sec. 15

Power County: T. 8 S., R. 30 E., Sec. 22

Twin Falls County: T. 14 S., R. 15 E., Sec. 7

Oregon: Malheur County; T. 41 S., R. 40 E. Sec. 9

Nevada: Elko County: 3 sites

Eureka County: T. 17 N., R. 49 E., Sec. 20

Humboldt County: T. 41 S., R. 40 E., Sec. 9

Mineral County: 3 sites

Nye County: 6 sites

V. Soil Type: Unstable slipping lacustrine soil.

VI. Habitat and Ecology: A. calycosus grows in areas barren of other vegetation surrounded by sagebrush. It often occurs near the edge of canyon rimrock.

VII. Remarks: This Idaho collection and those in Nevada may be a new variety.

VIII. Hazards: Increased agricultural development.

IX. Management Recommendations: Protect completely until the difference in this variety is worked out. If it is not a unique variety then it will be of little concern because the species is fairly widespread.

I. Astragalus camptopus (Murphy milk vetch)

II. Family: Leguminosae (Fabaceae)

III. Status: Federal Category II

IV. Known Locations:

Idaho: Owyhee County:

a. T. 1 S., R. 2 W., Sec. 28 & 29
b. T. 1 S., R. 2 W., Sec. 33 & 34
c. T. 2 S., R. 2 W., Sec. 3 & 4
d. T. 2 S., R. 2 W., Sec. 23
e. T. 2 S., R. 2 W., Sec. 32
f. T. 3 S., R. 2 W., Sec. 10
g. T. 6 S., R. 3 E., Sec. 22
h. T. 7 S., R. 3 E., Sec. 2, 3 & 9
i. T. 7 S., R. 5 E., Sec. 20 & 21
j. T. 8 S., R. 6 E., Sec. 20
k. T. 2 S., R. 5 E., Sec. 20 - (not mine)
l. T. 7 S., R. 3 W., Sec. 4

V. Soil Type: Sandy or sandy loam.

VI. Habitat and Ecology: Grows in sandy soils that are disturbed. Often found on the edge of streambeds and along roadsides. A. camptopus was destroyed to some extent in the late spring by a moth eating the foliage. Sharah Richards also found insect infestation in 1977.

VII. Remarks: A. camptopus is an endemic known only from Murphy, Idaho to Bruneau, Idaho.

VIII. Hazards: Increased agricultural development, off-road vehicles and range "improvement" programs.

IX. Management Recommendations: All known locations should be protected from hazards and A. camptopus seeds should be collected and used in nearby reseeding operations on sandy soils.

I. Astragalus iodanthus var. vipereus (Idaho milk vetch)

II. Family: Leguminosae (Fabaceae)

III. Status: Uncommon

IV. Known Locations:

Idaho: Owyhee County:

a. T. 1 N., R. 3 W., Sec. 35

b. T. 1 S., R. 2 W., Sec. 17

c. T. 2 S., R. 2 ?., Sec. 4

d. T. 2 S., R. 1 W., Sec. 9

e. T. 2 S., R. 6 W., Sec. 14

f. T. 3 S., R. 6 W., Sec. 12 & 13

g. T. 3 S., R. 1 E., Sec. 7, 25, & 31

h. T. 4 S., R. 1 E., Sec. 5 & 17

i. T. 4 S., R. 1 W., Sec. 10, 11 & 24

j. T. 5 S., R. 1 E., Sec. 11

k. T. 7 S., R. 5 E., Sec. 18 & 20

Elmore County: T. 5 S., R. 9 E., Sec. 3

Oregon: Malheur County:

a. T. 31 S., R. 41 E., Sec. 14, 15, 22 & 23

b. T. 23 S., R. 46 E., Sec. 21

c. T. 22 S., R. 46 E., Sec. 32

d. T. 26 S., r. 46 E., Sec. 5

V. Soil Type: Volcanic ash.

VI. Habitat and Ecology: A. iodanthus var. vipereus grows at low elevations 2500' - 4000' on ashy soils.

VII. [redacted]

soil. It has a wider range than [redacted]

I. Astragalus mulfordae (mulford's milk vetch)

II. Family: Leguminosae

III. Status: Federal Category II recommended as endangered 1984

IV. Known Locations:

Idaho: Owyhee County: two historic collections.

a. T. 2 S., R. 1 W., Sec. 6

b. T. 7 S., R. 5 E., Sec. 20 12-15 miles S.E. of Grand View (historic record apparently absent from the site at this time).

Ada County:

a. T. 3 N., R. 2 E., Sec. 2

b. T. 2 S., R. 1 W., Sec. 6 NW 1/4 near Halverson Lake

c. Four historic collections from the county

d. T. 4 N., R. 2 E., Sec. 35 & 36 S.E. 1/4 S.W. 1/4

Washington County: Crystal

a. Rebecca Hill T. 11 N., R. 4 W., Sec. 32

b. Sagebrush Hill T. 11 N., R. 5 W., Sec. 35

c. Jon Trails private land T 9 N., R 5 W., Sec. 12

d. Hill 1 m north of Rebecca Sand Hill, T. 11 N., R. 4 W., Sec. 28 NW 1/4 of NW 1/4 BHMM #739 May 2, 1985

e. Historic sites (2)

Oregon: Malheur County:

a. Historic site T. 22 S., R. 45 E., Sec. 3 Brown Butte near Adrian.

V. Soil Type: Sandy soil in what is apparently old river and lake terraces.

VI. Habitat and Ecology: Astragalus mulfordae grows in the sagebrush/grassland life zone in very deep sandy soils of south or west facing slopes. It has a very deep (2-6 feet) root system.

VII. Remarks: Near Boise, Idaho, Astragalus mulfordae sites are in sandy draws which are presently highly erosive. This erosion physically covers over A. mulfordae plants. Urbanization is destroying much of A. mulfordae's habitat near Boise. It appears to be destroyed by grazing and is now only found in pristine sites. The populations near Boise and those near Weiser, Idaho, may be different varieties. More taxonomic work needs to be done on this taxon.

IX. Management Recommendations: Protect from all hazards.

I. Astragalus nudisiliquus (cobblestone milk vetch)

II. Family: Leguminosae

III. Status: Uncommon

IV. Known Locations:

Idaho: Owyhee County:

a. 8 miles south of Bruneau

b. T. 7 S., R. 6 E., Sec. 34

c. T. 3 S., R. 1 E., Sec. 7

d. Near Indian Bath tubs

Gooding County:

a. T. 5 S., R. 12 E., Sec. 6

b. T. 6 S., R. 13 E., Sec.

Elmore County: T. 6 S., R. 11 E., Sec. 14

Payette County: 4 sites

Ada County: 2 sites

Canyon County: 2 sites

T. 1 N., -3 3

Oregon: Malheur County:

26 sites

Harvey County: 1 site

Nevada: Elko County: T. 47 N., R. 57 E., Sec. 2

V. Soil Type: Well drained volcanic soils.

VI. Habitat and Ecology: Astragalus nudisiliquus often grows in barren soils between Artemisia arbuscula.

VII. Remarks: A. nudisiliquus is easily confused with A. purshii and better collections in the area are needed. A. nudisiliquus is uncommon even where it is known to occur.

VIII. Hazards: Heavy grazing, range "improvement" programs, off-road vehicles, insect predation and Desert Land Entry developments.

IX. Management Recommendations: None at this time.

I. Astragalus purshii var. ophiogenes (pursh's milk vetch, wolly pod)

II. Family: Leguminosae (Fabaceae)

III. Status: Uncommon

IV. Known Locations:

Idaho: Owyhee County:

a. T. 5 S., R. 9 E., Sec. 7
b. T. 1 S., R. 5 W., Sec. 17 & 20
c. T. 2 S., R. 1 W., Sec. 6 & 9
d. West Guffy Butte
e. T. 7 S., R. 3 E., Sec. 9
f. T. 3 S., R. 4 W., Sec. 10 NW 1/4
g. T. 4 S., R. 1 W., Sec. 10 & 23
h. T. 5 S., R. 7 E., Sec. line 33-34 NE 1/4 NE 1/4
i. T. 6 S,. R. 6 E., Sec. 10
j. See Packard et al. 1980
k. T. 5 S., R. 1 E., Sec. 21
l. T. 3 S., R. 13 E., Sec. 10
m. T. 2 S., R. 1 W., Sec. 6

Ada County:

a. T. 2 S., R. 1 E., Sec. 18
b. T. 1 S., R. 1 W., Sec. 31 & 32

Gooding County:

a. T. 9 S., R. 15 E., Sec. 4
b. T. 6 S., R. 12 E., Sec. 7

V. Soil Type: Various.

VI. Habitat and Ecology: Eroded, dry, rocky or sandy bluffs and dunes from 2500' - 4000'.

VII. Remarks: This variety is hard to identify. It appears to be quite common, (Packard 1977, Eidemiller 1976), and not in need of protecting. Many people don't collect it because it is such a frustrating group. Packard et al. worked on this taxon in 1980 and although "small groups of plants" were the common occurrence they felt no need to protect this taxon. I suggest it for the State Watch List.

VIII. Hazards: Range "improvement" programs.

IX. Management Recommendations: Some sites need to be protected because the taxon occurs in low elevation areas with high human contact and impact.

I. Astragalus sterilis (barren milk vetch)

II. Family: Leguminosae

III. Status: Federal Category II

IV. Known Locations:

Idaho: Owyhee County:

24 miles S.W. of Marsing (1948 Peck and Barneby)

Oregon: Malheur: 18 sites

V. Soil Type: Volcanic ash-clay.

VI. Habitat and Ecology: Grows in barren, ashy ground.

VII. Remarks: Some of the Oregon sites are misidentifications. Not seen in Idaho since 1948.

VIII. Hazards: Mining claims and off-road vehicles.

IX. Management Recommendations: Between the narrow range and being confined to one vulnerable habitat, this species is endangered and should receive full protection from any hazards.

I. Astragalus vallaris (Snake Canyon Milk vetch)

II. Family: Leguminosae (Fabaceae)

III. Status: Idaho State Sensitive List, recommended for Federal Category II

IV. Known Locations:

Idaho: Adams County:

a. T. 18 N., R. 4 W., Sec. 3, SE1/4 of SW1/4

b. T. 18 N., R. 4 W., Sec. 4, NE1/4 of SE1/4

c. In disturbed area in road cut at end of airstrip, Hells Canyon Reservoir, March 1973, C.G.. Brown 73-12

d. A historic record, NW of Weiser

Oregon: Baker County:

a. Snake River Canyon near Ballards Landing, NE Baker County, Oregon

Malheur County:

a. T. 14 S., R. 41 E., Sec. 34, historic site

V. Soil Type: Clay loam of basaltic origin.

VI. Habitat and Ecology: In bitterbrush and bluebunch wheatgrass communities in the Snake River Canyon.

VII. Remarks: Presently restricted to small widely dispersed populations. Barneby's work of the Astragulus genus shows only five known collections. This milk vetch blooms in late April and May before most plant collectors have reached the field. On May 11, 1984, Blaine Mooers found that the majority of plants were already in fruit. The two populations observed by Blaine Mooers in the Grand Canyon of the Snake were located on sites that were in good range condition due to their steepness and distance from water. The absence of this plant from rangeland in poor condition may indicate that livestock grazing has been responsible for severely reducing the number of populations within this species' range.

VIII. Hazards: Overgrazing and cow "improvement" programs.

IX. Management Recommendations: Survey for more locations early in the spring and monitor the known locations. Protect known locations from abusive grazing.

I. Astragalus yoder-williamsii (Osgood Mtns. milk vetch)

II. Family: Leguminosae

III. Status: Emergency listing as endangered on Federal List, 1982; now merely a candidate species category II.

IV. Known Locations:

Idaho: Owyhee County:

a. T. 9 S., R. 1 W., Sec. 3, 8, 10 (site uncertain and unable to be relocated)

b. Newly found locations:

1) T. 10 S., R. 5 W., Sec. 36 & 22
2) T. 10 S., R. 4 W., Sec. 21 & 31
3) T. 10 S., R. 3 W., Sec. 2, 8
4) T. 8 S., R. 1 W., Sec. 36
5) T. 7 S., R. 2 W., Sec. 6 & 7

Nevada: Humboldt County: T. 38 N., R. 42 E., Sec. 6

V. Soil Type: In Idaho it occurs in fine loamy, mixed, frigid, Typic Argixeroll soils. These soils are derived from local alluvium overlaying welded tuff. In Nevada known from decomposed granite gravel.

VI. Habitat and Ecology: In Nevada known from exposed ridge crests in vegetation dominated by Artemisia arbuscula. In Idaho it occurs in mixed Artemisia arbuscula and low growing Artemisia tridentata ssp. vaseyana sites. It occurs in the lower elevation ranges for Artemisia tridentata spp. vaseyana. Climatically this area is xeric and frigid. It disappears at elevations above 5900' and is absent below 5300'.

VII. Remarks: Astragalus yoder-williamsii is related to A. mulfordae which as a natural group displays much diversity of habit and niche selection. The A. mulfordae group appears to have evolved locally in the southwest Idaho and the adjacent Oregon and Nevada area. This area is sometimes referred to as the little Owyhee-Mudflat Area.

In the field it's visual appearance is similar to a clump of Idaho fescue. This may have delayed the detection of this species which appears to be fairly common on the south side of the Owyhee Mountains. It even grows on the disturbed shoulder of the road, in old road right-of-ways and in areas of fair-good range condition. These collections have been verified by Rupert Barneby the current expert on this generic group.

VIII. Hazards: ORV use on the easily eroded soil and mining operations are hazards to Astragalus yoder-williamsii.

IX. Management Recommendations: Protect from all hazards at this time. The exact range of A. yoder-williamsii in the Owyhee area should be determined. Studies on the basic ecology of A. yoder-williamsii and the effects of grazing should be undertaken. Monitoring sites should be established in several A. yoder-williamsii sites.

I. Camassia cusickii (Cusick's camass)

II. Family: Liliaceae

III. Status: On Idaho's sensitive species list

IV. Known Locations:

Idaho: Adams County:

a. T. 18 N., R. 4 W., Sec. 10, NE 1/4 of NE 1/4

b. T. 18 N., R. 4 W., Sec. 3, SW 1/4 of SW 1/4

c. T. 18 N., R. 4 W., Sec. 33, SW 1/4 of SE 1/4

d. T. 18 N., R. 4 W., Sec. 4, SE 1/4 of NE 1/4, NE 1/4 of SE 1/4

e. T. 18 N., R. 4 W., Sec. 9, SE 1/4 of SW 1/4, NW 1/4 of SW 1/4

f. T. 18 N., R. 4 W., Sec. 21, SW1/4 of NW1/4

g. T. 19 N., R. 4 W., Sec. 20

h. Snake River mi. 270.1, just below Oxbow Dam - 1974 historic record

i. Approximately 1 mi. N. of Oxbow Bridge - historic record

Gem County: Squaw Butte, T. 8 N., R. 1 W., Sec. 13, 24, 25

Washington County: Warm Springs Cr. (mapped at Spring Cr.), Brownlee Reservoir, Snake River T. 17 N., R. 5 W., Sec. 28 or 27

Ada County: T. 2 N., R. 4 W., Sec. 22 or 23

Oregon: Several sites - North Pine Creek and the Upper Imnaha River

V. Soil Type: Silt loam of basaltic origin.

VI. Habitat and Ecology: Steep south-facing areas and portions of streams with slow moving water within bitterbrush and bluebunch wheatgrass communities of the Snake River Canyon.

VII. Remarks: Found in Summer Creek, Limestone Gulch, Williamson Creek, and Jacobs Ladder Creek. Three miles south of Oxbow Dam. Apparently absent north of Oxbow Dam at this time. In Oregon, this plant has historically been found on open meadows. Livestock grazing (esp. sheep) may have removed the meadow populations and left the streamside populations in inaccessible places. Some populations found by Blaine Mooers on May 14, 1985 were grazed by cattle. Apparently, the present grazing pressure is eliminating this species from public lands.

VIII. Hazards: Road construction across streams and by livestock grazing.

IX. Management Recommendations: Monitor and protect from hazards.

I. *Carex aboriginum* (Indian Valley Sedge)

II. Family: Cyperaceae

III. Status: Federal Category II list.

IV. Known Locations:

Idaho: Adams County:

Indian Valley - (type collection) Coll. July 12, 1899 by M.E. Jones. Collection is in the New York Botanical Garden Herbarium.

V. Soil Type: "Dry gumbo soil wet in the spring."

VI. Habitat and Ecology: *Carex aboriginum* appears to occur in gumbo soil but with so few collections little more can be said. Collected at 2300 feet in Idaho.

VII. Remarks: "This species needs field investigation and may be extinct, but the notably rich representation of the Cyperaceae in the type locality suggests that it may still exist."

Mackenzie's "*C. aboriginum*," in North American Flora 18:364, is completely different from Jones' type collection (which is actually closely related to *C. serratodens*) and is really a variant of *C. parryana* (var. *brevisquama*).

VIII. Hazards: None known at the present time.

IX. Management Recommendations: Field work needs to be done in the Indian Valley area in late June-July to see if *C. aboriginum* is still present.

I. Chaenactis cusickii (cusick's false yellow)

II. Family: Compositae

III. Status: Idaho State sensitive list.

IV. Known Locations:

Idaho: Owyhee County:

T. 2 N., R. 5 W., Sec. 22 & 27

Oregon: Malheur County:

a. T. 23 S., R. 43 E., Sec. 12

b. T. 22 S., R. 47 E., Sec. 32

c. T. 25 S., R. 44 E., Sec. 34

d. T. 2 N., R. 46 E.,

e. 4 other Malheur County sites.

V. Soil Type: Loose volcanic ash mixed with a small pick up of clay.

VI. Habitat and Ecology: Chaenactis cusickii grows on loose volcanic ash with a pick up of clay in it. This soil expands and contracts so is very unstable. It is found at low elevations 2500' - 3200'. C. cusickii is an annual.

VII. Remarks: This species has only been found in one location in Idaho and is endemic to one soil type.

VIII. Hazards: Off-road vehicles and mining. This substrate can be used to line and seal irrigation ditches.

IX. Management Recommendations: Protect from all hazards. This soil type and habitat is very inviting to off-road vehicles. The one site in Idaho is on private land that should be acquired for protection.